

What is claimed is:

1. An imaging device comprising:

an optical train for receiving optical ray bundles, said optical train defining an optical axis;

a focal plane array arranged for detecting said optical ray bundles;

a field lens positioned between said optical train and said focal plane array, said field lens having a planar surface, an opposing convex surface and a lens perimeter that defines a geometric center;

said lens perimeter having at least one straight edge and one curved edge; and,

said field being decentered with said device so that said optical axis intersects said field lens at an offset distance from said geometric center.

2. The device of claim 1 wherein said lens perimeter has two straight edges and a curved edge.

3. The device of claim 2 wherein said straight edges are perpendicular and have an equal edge length.

4. The device of claim 1 wherein said field lens has a planar surface that is normal to said optical axis and an opposing convex surface that faces said focal plane array.

5. The device of claim 4 wherein said focal plane array is tilted so that said optical ray bundles, after passing through said field lens, impinge on said focal plane array at a

constant incidence angle.

6. The device of claim 5 wherein said field lens is made of non-linear optical material.

7. An imaging apparatus comprising:

an optical train for receiving optical ray bundles, said optical train defining an optical axis;

a focal plane array arranged for detecting said optical ray bundles;

a field lens positioned between said optical train and said focal plane array so that said optical ray bundles pass therethrough;

said field lens having a rectangular lens perimeter with four lens corners; and,

said field lens having a lens thickness measured from said planar surface to said convex surface, said lens thickness having a spherical decrease from a maximum thickness at one of said corners to a lesser thickness at each respective remaining corner.

8. The apparatus of claim 7 wherein said field lens has planar surface normal to said optical axis and an opposing convex surface that faces said focal plane array.

9. The apparatus of claim 8 wherein said field lens is positioned so that said rectangular perimeter is centered on said optical axis.

10. The apparatus of claim 7 wherein said field lens is made of a non-linear optical material

11. An imaging device comprising:

an optical train for receiving optical ray bundles, said optical train defining an optical axis;

a focal plane array for detecting said optical ray bundles;

a circular field lens positioned between said optical train and said focal plane array, said field lens having a geometric center when viewed in top plan; and,

said circular field lens aligned on said optical axis so that said optical axis intersects said field lens at an offset distance from said geometric center.

12. The device of claim 11 wherein said circular field lens has a planar incident surface and an opposing convex surface, said incident surface normal to said optical axis, said convex surface facing said focal plane array.

13. The device of claim 11 wherein said field lens is made of a non-linear optical material.

14. The device of claim 11 wherein said field lens has opposing convex surfaces.

15. A method for minimizing retroreflection from an imaging device comprising the steps of:

(A) receiving optical ray bundles through an optical train that defines an optical axis;

(B) arranging a focal plane array in a manner that allows said optical ray bundles to impinge on said focal plane array;

(C) affording a field lens having a geometric center when viewed in top plan; and,

(D) positioning said field lens between said optical train and said focal plane array so that said field lens is decentered and said optical axis intersects said field lens at an offset distance from said geometric center.

16. The method of claim 15 wherein said field lens is circular and further comprising the step of:

(E) removing a portion of said field lens to establish a quarter-circle section; having perpendicular straight edges of equal length and a third arcuate edge; and,

(F) milling said arcuate edge to establish a rectangular field lens having a rectangular perimeter when observed in plan view, said rectangular field lens;

(G) re-establishing a geometric center for said rectangular field lens; and,

(H) accomplishing step (D) so that said optical axis passes through said geometric center, step (H) being performed after step (G).

17. The method of claim 16 wherein said step (C) further comprises the step of:

(I) shaping said field lens with a planar incident surface and an opposing convex surface.

18. The method of claim 17 wherein said step (D) is accomplished so that said optical ray bundles are incident on said planar incident surface and said convex surface faces said

focal plane array.

19. The method of claim 18 wherein said step D) establishes a revised image plane that intersects a plane containing the focal plane array, and further comprising the step of:

(J) tilting said focal plane array so that said focal plane array is co-planar with said revised image plane to.